

NUTRIENT INTAKE AND GROWTH PERFORMANCE OF GROWING YANKASA SHEEP FED UREA – TREATED AND UNTREATED ACHA (*Digitaria exilis*) STRAW WITH SUPPLIMENTS.

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ABSTRACT

Sixteen (16) growing Yankasa sheep with average weight 11-17 kg were used for the experiment which was conducted at National Veterinary and Research Institute Vom, Jos, Plateau state. The animals were randomly assigned to four treatment groups in a complete randomized designed which lasted for 11 weeks. Animals were fed basal diet of untreated and urea treated Acha straw ad libitum with 300g of the supplementary diet which were designated as T1 (untreated acha straw + cotton seed cake and maize bran 50:50), T2 (untreated acha straw + dry poultry litter and maize bran 50:50), T3 (urea treated acha straw + cotton seed cake and maize bran 50:50) and T4 (urea treated acha straw + dry poultry litter and maize bran 50:50). The results of the study reveals that animals fed diet T4 significantly ($P<0.05$) recorded the highest basal and supplementary diets intake of 618.60 and 241.77g/day, while those fed T1 recorded the least (545.80 and 209.43g/day). Significant differences ($p<0.05$) were recorded in crude protein intake with highest intake (174.87g/day) recorded in animals fed diet T3 while those fed T2 recorded the least (78.88g/day). Highest average daily weight gain (ADG) was significantly ($P<0.05$) recorded in animals fed T4 (136.36g/day) and the least recorded in T1 (49.90g/day). Better feed utilization of 5.60 was recorded in animals fed T4 as compared to those fed T1 with 15.70. Animals fed T4 recorded the highest final body weight with ADG of 136.36g/day. Since utilization of urea treated acha straw with dry poultry litter and maize bran 50:50 as supplement (which treated) gave the best ADG, it may therefore be recommended in growing Yankasa sheep.

Key words: Nutrient intake, Growth performance, *Digitaria exilis*, Urea

INTRODUCTION

Ruminant animals play an important social and economic benefits to man (Devendra and Burns 1983). They are reared for several reasons but most importantly for their contributions to animal protein supply, with sheep as highly domesticated. The Nigerian breeds are mainly the hairy type and there are four breeds: the West African Dwarf, Yankasa, Uda and Balami. The Yankasa is a meat breed found in North and North central Nigeria. The Yankasa is a medium-sized breed of sheep. The tail is long and thin, the ears moderately long and somewhat erect. They have white coat colour with black patches around the eyes, ears and muzzle.

MATERIALS AND METHODS

Experimental Site

The experiment was conducted at National Veterinary and Research Institute Vom, Jos, Plateau state. Though situated in the tropical zone has a higher altitude and temperature with the average of eighteen to twenty two degree Celsius (20°). The harmattan causes the coldest weather between December and February. The warmest temperature usually occurs in the dry season of March and April. The mean annual rainfall usually is 131.75cm in the southern part to 146cm in the northern Plateau. The highest rainfall is recorded during the wet season months of July and August (Kalney *et.al* 1996).

Experimental animals and management

Sixteen (16) growing Yankasa rams with an average weight 11-17 kg were purchased. The animals were quarantined for 14 days, treated against ectoparasites and endoparasites and injected with L.A antibiotics. The animals were also vaccinated against peste des petits ruminants (PPR) using tissue

culture rinderpest vaccine and dewormed at four weeks intervals. The feeding trial lasted for 11 weeks.

Experimental Diets

Basal and Supplementary diets were used for the experiment. The basal diets consist of untreated acha straw and urea treated acha straw. The two supplementary diets were made to contain maize bran and cotton seed cake (50:50) and Maize bran and Sun Dry poultry litter (50:50). Also 2kg of urea was dissolved in 100 liters of water to make 2% urea solution, 100kg of acha straw was soaked into the solution for one hour and kept under the sun for forty eight hours to dry.

Animal feeding: Growing yankasa rams were randomly allotted into four dietary treatments with each treatment comprising four replicates and each animal was fed with a basal diet and specified supplement. Treatment1= Untreated Acha Straw + Maize bran/Cotton seed cake (50:50), Treatment2=Untreated Acha Straw +Maize bran/Sun Dry poultry litter (50:50), Treatment3= Urea treated Acha Straw + Maize bran /Cotton seed cake (50:50), Treatment4=Urea treated Acha Straw + Maize bran/Sun dry poultry litter (50:50).

Data collection: Residual feed which were the basal diet and supplement were weighed and provided to the animals, while the voluntary intake of the feed by each animal was estimated as the difference between the daily feed offered and theorts. At the onset of the trial the initial body weight of each animal was taken and body weight gain was recorded, while during digestion trial a total of voided faeces by each animal was collected for seven days, weighed when wet and dry and then kept for analysis. The data was analyzed using complete randomized design.

RESULTS AND DISCUSSION

Table 1: Chemical composition of untreated and urea treated acha straw and supplements

Parameters (%)	UTAS	TAS	CSC+MB	DPL +MB
Dry matter	91.23	88.64	91.27	88.98
Organic matter	84.48	79.40	84.22	82.87
Crude protein	5.78	19.23	25.59	21.15
Neutral detergent fibre	46.87	41.62	48.76	53.31
Acid detergent fibre	35.54	31.19	37.53	41.72
Hemicelluloses	11.33	10.43	11.23	11.59
Ether extract	1.56	0.69	2.32	1.33
Ash	6.75	9.24	7.05	6.11

UTAS-untreated acha straw, TAS- urea treated acha straw, CSC+MB- cotton seed cake maize bran 50:50, DPL +MB- dry poultry litter and maize bran 50:50

Table 2: Nutrient intake of Yankasa rams fed untreated and urea treated acha straw with different supplementation

Parameters	Treatments				SEM
	T1	T2	T3	T4	
Average daily basal feed intake (g)	545.80 ^c	575.60 ^b	602.60 ^b	618.60 ^a	31.87*
Average daily supplement intake (g)	209.43 ^c	215.63 ^c	230.48 ^b	241.77 ^a	10.94*
Average daily feed intake (g)	755.23 ^c	740.23 ^b	833.08 ^b	860.37 ^a	38.85*
Dry matter intake (g/day)	689.08	740.75	744.51	763.46	NS
Organic Matter Intake (g/day).	637.47	664.96	672.57	691.52	NS
Crude Protein Intake (g/day)	85.14 ^b	78.88 ^b	174.87 ^a	170.09 ^a	6.36*
Neutral Detergent Intake (g/day)	357.94	384.71	363.18	386.35	NS
Acid Detergent Intake (g/day)	272.58	294.47	274.45	293.81	NS

^{a,b,c} means with different superscript along the same row are significantly different, * (P<0.05), LSD-least significant difference, NS = Not Significant, T1- untreated acha straw + cotton seed cake maize bran 50:50, T2- untreated acha straw + dry poultry litter and maize bran 50:50, T3-urea treated acha straw + cotton seed cake maize bran 50:50, T4-urea treated acha straw + dry poultry litter and maize bran 50:50

Table 3: Growth Performance of animals fed the experimental diets

Parameters	Treatments				SEM
	T1	T2	T3	T4	
Initial weight (kg)	15.50	13.00	14.75	15.25	NS
Final weight (kg)	18.88 ^d	19.88 ^c	23.88 ^b	25.75 ^a	1.93*
Total weight gain (kg)	3.38 ^d	6.88 ^c	9.63 ^b	10.5 ^a	0.60*
Daily weight gain (g)	43.90 ^d	89.35 ^c	125.06 ^b	136.36 ^a	7.76*
Dry matter intake (g/day)	689.08	740.75	744.51	763.46	NS
Feed conversion ratio (FCR)	15.70 ^d	8.29 ^c	5.95 ^b	5.60 ^a	1.11*

^{a,b,c,d} means with different superscript along the same row are significantly different, * (P<0.05), SEM-, , NS = Not Significant,

Basal diet and supplement intake: The average basal diet intake in this study was 618.60g/day in animals fed diet (urea treated acha straw + dry poultry litter and maize bran 50:50) which is higher than 339.91g/day reported by Gebreselassie *et al.* (2015) in local sheep fed barley straw. The supplement intake reported in his study was wheat offal (100g/day) which is lower than the value recorded in the present study (241.77g/day). The result of this study was also higher than the range 333 to 349g/day basal diet (urea treated wheat straw) fed to sheep as reported by Assefa *et al.* (2014) and higher supplement intake 225 to 270g/day than the present study.

Nutrient intake: The dry matter intake (DMI) in this study was not significant (P>0.05). However, it ranged between 755.23 to 760.37g/day across the treatment. This was higher than the DMI of 735.5g/day reported by Garba and Jinjiri (2013) which fed graded levels of *Tamarindus indica* leaves to growing Yankasa rams. Getahun (2014) reported DMI of 567g/day for sheep fed urea treated wheat straw and *leucaena leucocephala* foliage hay supplementation. The organic matter intake in this study was not significant and range from 637.47 to 691.52g/day which is higher than 560g/day reported by Assefa *et al.* (2015) when fed urea treated wheat straw with supplementation of 300g/day of atelle cake. Gebreselassie *et al.* (2015) recorded OMI of 617.23g/day when fed barley straw *ad libitum* plus (100g wheatbran + 200g *acacia seyal* leaf) which is not in consistent with the present study. The crude protein intake (CPI) in this study is 174.87g/day in animal fed (urea treated acha straw + dry poultry litter and maize bran 50:50) while it was higher than 72g/day and 76.86g/day recorded by Assefa *et al.* (2015) and Gebreselassie *et al.* (2015). The Neutral detergent fibre intake in this study was within the range of 357.94 to 386.37g/day which is similar to that of (384.76g/day) reported by Gebreselassie *et al.* (2015). The Acid detergent fibre intake (ADFI) range 272.58 to 293.81g/day in this study. This is within the range of 236.05 to 306.81g/day reported by Gebreselassie *et al.* (2015). Final body weight (FBW) of 25.75kg was reported by in this study which is higher than the range of 15.4 to 20.5kg reported by Assefa *et al.* (2015). The lowest FBW gain of 18.88kg recorded in this study falls within the range reported by Assefa *et al.* (2015). The FBW in this study was similar to 24.50 kg reported by Nyako (2015) in Yankasa rams fed groundnut hay with different supplements. The daily weight gain (DWG) of 136g/day recorded in this study was higher than 94.60g/day reported by Nyako (2015) in rams fed groundnut hay supplemented with 300g maize bran. Better feed utilization of 5.60 was recorded in animals fed diet (urea treated acha straw + dry poultry litter and maize bran 50:50) since they had the highest weight gain with similar DMI with other groups.

CONCLUSION

It could be concluded that urea treated acha straw with dry poultry litter and maize bran 50:50 as supplement resulted into higher intake of the straw by animals. Animals fed basal diet with supplements (urea treated acha straw + dry poultry litter and maize bran 50:50) recorded the highest final body weight of (25.75kg) with average daily weight gain of 136.36g/day. Higher nutrient digestibility were recorded in animals fed basal diet with supplements (urea treated acha straw + dry poultry litter and maize bran 50:50)

RECOMMENDATION

Since the utilization of urea treated acha straw with dry poultry litter and maize bran 50:50 as supplement gave the best ADG of 136.36g/day it may therefore be recommended in growing Yankasa rams.

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